CLAIMS

1. Molecular complex between a tissue extract containing at least one known component and unknown components and a molecular vector comprising a particle bearing sugars and/or polypeptides, said molecular vector being able to recognize :

- said known component of said tissue extract, and
- a phagocytic receptor of monocyte derived cells,

with the proviso that said polypeptides are different from antibodies.

2. Molecular complex according to claim 1, wherein the molecular vector comprises a particle bearing polypeptides and/or sugars such that :

- at least one of the said polypeptides and/or sugars recognizes said known surface component of the tissue extract,
- at least one of the said sugars and/or polypeptides recognizes phagocytic receptors of monocyte derived cells such as receptors for mannose or for oligosaccharides or Fc receptors of monocyte derived cells.

3. Molecular complex according to claim 2, wherein the molecular vector comprises or is a particle of about 0,1 to about 2 μm of biocompatible polymer comprising

- surface polypeptides and/or sugars, preferably covalently linked to the surface of said particle, with said surface polypeptides and/or sugars recognizing said known component of the tissue extract, and
- mannolysated residues recognizing the mannose or oligosaccharide receptors of monocyte derived cells.

4. Molecular complex according to anyone of claims 1 to 3, wherein the tissue extract comprises macroscopic fragments or killed or irradiated or

haptenized human or animal tumor cells such as lysates or apoptotic bodies, or killed pathogens, such as viruses or bacteria.

5. Molecular complex according to claim 4, wherein the polypeptide of the particle recognises one known epitope of the tissue extract chosen among known tumor antigens such as (tumor peptide antigen) MelanA/MART-1, MAGE, BAGE, GAGE families ; MUC, EGF-R, ERB-2, PSA, PSMA, HSP70, CEA, P53, RAS, Tyrosinase, gp100,...

6. Molecular complex according to anyone of claims 1 to 3, wherein the tissue extract comprises normal tissue parts such as tissue membranes, tissue factors, tissue proteins, macroscopic fragments of tissue such as lysates or apoptopic bodies, said tissue being originating from any part of human **or** animal body or cellular extracts thereof, in particular from thymus, lung, pancreas, cartilage, endothelium, neuromuscular junctions, prostate, sexual organs, bladder, muscles, peripheral nerves, CNS extracts, spleen, liver, bone, heart, skin cells.

7. Molecular complex according to claim 6, wherein the polypeptide and/or sugars of said particle forms high affinity binding with any component of said tissue extract.

8. Molecular complex according to anyone of claims 1 to 7, wherein the monocyte derived cells recognized by said molecular complex are macrophages, dendritic cells, or antigen presenting cells.

9. Monocyte derived cells such as prepared according to a process comprising the step of contacting monocyte derived cells with a molecular complex according to anyone of claims 1 to 8.

10. Monocyte derived cells such as prepared according to a process comprising contacting monocyte derived cells with a molecular complex according to anyone of claims 1 to 5, under conditions enabling phagocytosis of said molecular complex by said monocyte derived cells, intracellular degradation and processing of the known and unknown components of the tumor tissue extract and the presentation of said known and unknown components on the peripheral membrane of the monocyte derived cells together with MHC I and MHC II molecules.

11. Monocyte derived cells such as prepared according to a process comprising contacting monocyte derived cells with a molecular complex according to any one of claims 1 to 3, 6 and 7, under conditions enabling phagocytosis of such molecular complex by the monocyte derived cells.

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12. *Ex vivo* method for stimulating cellular and/or humoral immune responses against unknown components of a tumor tissue extract comprising contacting monocyte derived cells with a molecular complex according to anyone of claims 1 to 5, under conditions enabling phagocytosis of said molecular complex by monocyte derived cells, intracellular degradation and processing of the known and of unknown components of the tumor tissue extract and the presentation of said known and unknown components on the peripheral membrane of the monocyte derived cells, together with MHC I and II molecules.

13. Method of inducing *in vivo* specific cellular and/or humoral immune responses against unknown components of tumor tissue extract comprising injections of a molecular complex according to anyone of claims 1 to 5, for instance by intramuscular, subcutaneous, local or intravenous route.

14. Method of inducing *in vivo* specific cellular and/or humoral responses against unknown components of a tumor tissue extract, comprising sequential and/or simultaneous injections of monocyte derived cells presenting known and unknown components of said tumor tissue extract, together with MHC I and II molecules, as defined in claim 12, and of molecular complexes according to anyone of claims 1 to 5.

15. Method for conditioning *ex vivo* human monocytes derived cells, and preferentially macrophages, for them to acquire tissue specificity, comprising contacting monocyte derived cells with a molecular complex according to anyone of claims 1 to 3, or 6 and 7, under conditions enabling phagocytosis of such molecular complex by the monocyte derived cells.

16. Method of treatment of diseases involving accumulation of conditioned monocyte derived cells according to claim 15 in specific tissue to induce tissue repair and/or regeneration comprising :

- either simultaneous and/or sequential injections of monocyte derived cells and of a molecular complex according to anyone of claims 1 to 3, or 6 and 7, under conditions enabling phagocytosis,
- or injection of the monocyte derived cells which have previously phagocytosed a molecular complex according to anyone of claims 1 to 3 or 6 and 7.